#### Interdepartmental letterhead

Mail Station L-5

*Ext*: 3-8770

December 1, 2005

TO: Associate Directors

FROM: Wayne J. Shotts

SUBJECT: Implementation of the revised Chronic Beryllium Disease Prevention Program

UCRL-AR-144636-REV-2

The Laboratory's Chronic Beryllium Disease Prevention Program (CBDPP) has recently been revised; the revised document is UCRL-AR-144636-REV-2 (June 30, 2005). A critical change in the revised CBDPP that must be implemented is to ensure that all individuals newly assigned to beryllium work, including those working in chemical hygiene laboratories, complete the requirement for a baseline beryllium (Be) lymphocyte proliferation blood test (LPT) before commencing any work that entails possible airborne exposure. Employees may complete the requirement either by taking the LPT or declining it.

Effective December 2, 2005, all Authorizing Individuals (AIs) and Responsible Individuals (RIs) must ensure implementation of the new requirements for identification of workers, baseline LPT, and training for all workers with potential exposure to airborne beryllium at the following times:

- 1. When workers are added to a new or existing IWS (or equivalent work control document), before they begin any beryllium work;
- 2. When a major change is made to an existing IWS (or equivalent work control document);
- 3. No later than December 1, 2006, for all other IWSs (or equivalent work control documents).

Using the attached guidance and revised IWS form, AIs and RIs for beryllium work are to ensure that all workers with potential exposure to airborne beryllium have completed the following before work involving potential beryllium exposure begins:

- 1. Classify worker's exposure potential;
- 2. Ensure workers have completed the baseline LPT requirement;
- 3. Ensure workers have been properly trained in beryllium hazards and controls.

Additional information or assistance on these requirements, as well as other questions related to implementation of the CBDPP, is available through the ES&H Teams or from George Fulton at 4-5162. For questions on the medical aspects of the CBDPP, please call Health Services Department, Bill Pereira, M.D., at 2-0382.

Wayne J. \$\beta\text{hotts}

Deputy Director før Operations

Attachments (2)

CC:	
Beach, Rex D.	L-668
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## bcc:

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for Peterson, Barbara Lane, Monya, Lateiner, Manny Lopez, Jim Michels, Ted Robinson, Denise Sedlacek, Larry Shotts, Wayne Smith, Pam Souza, Lori Turteltaub, Brenda Wenning, Sarah Wisoff, Jeff Yon, Lynda Younker, Lee	L-176 L-151 L-668 L-653 L-559 L-005 L-160 L-001 L-660 L-090 L-314 L-452 L-466 L-001 L-005

# Requirements and Guidance on Determining if a Worker is Designated as Exposed, or Potentially Exposed, to Airborne Beryllium

The following requirements and guidance are provided to assist in determining if a worker is currently designated as exposed, or potentially exposed, to beryllium in work subject to 10 CFR 850, "Chronic Beryllium Disease Prevention Program (CBDPP)," or to 29 CFR 1910.1450, "Occupational Exposure to Hazardous Chemicals in Laboratories," and the actions that are to be taken. Your best resources to address this issue are ES&H Team Industrial Hygienists, Team Clinicians, and the Beryllium Subject Matter Expert.

In implementing these requirements, the first priority is to new IWSs and workers newly assigned to tasks that may have beryllium exposure. All other IWSs, as they are reviewed shall be brought in conformance with these requirements no later than December 1, 2006. The requirements for workers designated as exposed, or potentially exposed, are summarized in the following tables:

Table 1a. Requirements for Workers Subject to 10 CFR 850

Classification*	Training	Medical Exam Frequency
BAW-1	HS4256	Annual
BAW-2	HS4256	Triennial
Future BAW	Information packet only	LPT only

Table 1b. Requirements for Workers Subject to 29 CFR 1910.1450 (Chemical Hygiene Laboratories)

Classification*	Training	Medical Exam Frequency
BAW-1	HS4254-W	Annual
BAW-2	HS4254-W	Triennial
Future BAW	Information packet only	LPT only

<sup>\*</sup> Acronyms are described in the text below

The eIWS has been modified to capture the necessary information. Organizations not using the eIWS are to follow the same process and may use the attached revised IWS form.

These requirements are effective December 2, 2005.

### **Activities Subject to 10 CFR 850**

Although no exposure threshold is specified in 10 CFR 850, examples of situations that would result in a worker being designated as exposed, or potentially exposed, include the following:

- Working with beryllium in a process or operation that can produce airborne beryllium.
- Working at tasks, regardless of the level of airborne concentration, such as
  - machining, milling, polishing, grinding, drilling, or welding beryllium;
  - repairing or servicing equipment that has removable beryllium contamination that exceeds release levels;
  - maintenance of systems used to contain and control beryllium;
  - working in an area where dispersible beryllium exceeding release levels is present;
  - other operations that disturb or abrade beryllium in a way that results in contamination exceeding release levels.
- Future beryllium associated workers are those who are not currently engaged
  in activities that meet the above criteria; however, it has been identified that
  they must be available to engage in such work on short notice.

To determine if a worker should be designated as exposed, or potentially exposed, the following are to be considered:

- If air sampling shows measurable airborne concentrations of beryllium, the worker is designated as *exposed to beryllium*, regardless of the respirators being used.
- If the worker is handling beryllium contaminated ( $\geq 0.2 \,\mu g/100 \,\mathrm{cm^2}$ ) items, the worker is designated as *exposed or potentially exposed to beryllium*. If the parts are not known to be clean (i.e., there is verified contamination  $< 0.2 \,\mu g/100 \,\mathrm{cm^2}$ ) they are assumed to be contaminated.
- If air sampling shows no detectable exposure and there is no surface contamination above the release criteria ( $<0.2 \mu g/100 \text{ cm}^2$ ), the worker is *not exposed*.
- Mere presence or transient in an area where beryllium is present, even if contaminated, would not result in a worker being designated as exposed, unless there is an ambient level of beryllium in the air due to beryllium activity in the area.

If the exposure, or potential exposure, is  $\geq 10$  days/year, the worker is designated as a Beryllium Associated Worker-1 (BAW-1). They must complete the required training, HS4256 Beryllium Worker Training; and they will receive an annual offer of the appropriate medical surveillance examination. Under the revised CBDPP, if exposure or potential exposure is <10 days/year, the worker is designated as a Beryllium Associated Worker-2 (BAW-2). They must complete the required training, HS4256 Beryllium

Worker Training; and they will receive a triennial offer of the appropriate medical surveillance examination.

Classifications BAW-1 and BAW-2 are a measure of relative risk. Some situations may warrant a different approach: a less frequent activity with a potential for higher exposures (a higher potential risk) should result in designating a worker as a BAW-1; likewise, a more frequent activity with very little potential for exposure (a lower potential risk) might not classify a worker as a BAW-1, but as a BAW-2. In case of uncertainty as to frequency or exposure potential, the more conservative approach is to designate the worker as a BAW-1. Contact your ES&H Team Industrial Hygienist for assistance in evaluating your specific situation.

The revised eIWS will allow Responsible Individuals (RI) to select one of the following categories: BAW–1 ( $\geq$ 10 days per year), BAW-2 (< 10 days/year), or future beryllium associated worker (potential future exposure).

## Activities Subject to 29 CFR 1910.1450

Work with beryllium in chemical hygiene laboratories is now clearly and consistently addressed by the overall beryllium program as follows:

- The air and surface standards of 10 CFR 850 apply to work in chemical hygiene laboratories.
- Chemical hygiene laboratory workers are to be offered medical surveillance just like workers subject to the CBDPP.
- Training in beryllium hazards shall be provided as required by the LLNL Chemical Hygiene Plan; a Hazards Control course is being developed to assist the programs in meeting this requirement.
- Other regulatory aspects of 10 CFR 850 do not apply to chemical hygiene laboratories.

The revised eIWS also has a check box for classifying a work area as a "chemical hygiene" laboratory. ES&H Team Industrial Hygienists can assist in this determination. The chemical hygiene classification determines the appropriate training course. This new LLNL policy clarifies certain aspects of the CBDPP to chemical hygiene laboratories, specifically the offer of medical surveillance in the same manner as for worker subject to the CBDPP. Classification of worker exposure (BAW-1, BAW-2, future BAW) is to be done in the same manner. New chemical hygiene IWSs are to be handled in the same manner as those subject to the CBDPP. A new training class, HS4254-W, for workers in chemical hygiene laboratories is being developed.

#### Scheduling Medical Surveillance

Beryllium medical surveillance consists of the lymphocyte proliferation test (LPT), and other medical tests as determined by 10 CFR 850, and at the discretion of the examining physician. The critical test to be completed prior to any beryllium exposure is the LPT as this test is indicative of whether the worker's immune system is sensitized to beryllium. "Completed" means that the LPT is to be offered by the Health Services Department and either performed (blood drawn) or declined. The remainder of the medical surveillance examination can be performed later.

#### **Summary**

In summary, any new IWS or modification to an existing IWS on or after December 2, 2005, involving work with the potential for airborne beryllium requires the immediate implementation of the medical surveillance and training requirements noted above. All other IWSs involving beryllium-related work will address these requirements as part of their review, and no later than December 1, 2006.

These and other changes to the CBDPP will be formalized in the near future through revision of the applicable ES&H Manual documents (including Documents 2.2, 10.1 and 14.4), the LTRAIN questionnaire, and eIWS system to expand the classification of beryllium associated workers. These actions will facilitate the implementation of all aspects of the revised CBDPP as quickly as possible.

#### **Contacts and More Information**

Employees who are listed on a beryllium IWS may call Health Services Department, at 2-7462, to schedule or decline the LPT test. For additional information on the beryllium LPT, or other health aspects of beryllium exposure, please call Bill Pereira, M.D., at 2-0382.

Organizations not using the eIWS system must ensure that RIs assigned to an IWS with the beryllium box selected implement this process accordingly. For assistance, contact George Fulton, Beryllium Subject Matter Expert, at 4-5162.

# Integration Work Sheet (IWS)

IW	/s [	SP a	ttached	Ti	itle:		
		F	PART I ADI	MINISTRATIVE INF	ORMATION (comp	leted by RI)	
	anagement Chain dividual (AI), name of AI					managers between the R	I and Authorizing
Lo	cation Facility	/ Room(s	) FPO	С	ES&H Team	Intended Start Date: Est. Completion Date:	or to be determined
	nployees (E) & Guests <u>me</u>	(G) assigne	ed to this ac E or G	tivity: Employee #	<u>Name</u>	E or (	G Employee #
			Part II	SCOPE OF WORK	· SP (complete	ed by RI)	
Sa	Scope of work attache  afety Plan (SP)—Is to New SP needed—attach	d here a current	t SP (SP form	or OSP or FSP) coverin	ng this work? □ Yes-a	cientific basis) and the use of ttach# ES&H Manual Doc 2.2 App.	
	this IWS for Chemical Hygi						
*Do	oes this apply to all location	is? ∐ Yes	∐ No *If	No, list locations it does	s not apply to:		
	P	ART III HA	ZARDS/EN	VIRONMENTAL AS	SPECTS & CONTRO	ous (completed by R	<i>I)</i>
На	zards/Environmental /						
						binant DNA, exposure to sewaplants	age) Sharps/ needles
	/irritants  Reactive mat	erials (e.g., ai Pesticides	ir/water sensiti	ve; pyrophoric; thermall Materials of special co	ly, shock, or friction sen	oxic, toxic, systemic toxin, toxi sitive; perchlorate)	gens, mutagens,
	(deactivated alarms, inter- equipment ☐ Moving/lifti thermal cutting ☐ Stored	lock bypass) ing large or he I potential ene I Roof acce	☐ Drilling ☐ eavy items (incergy ☐ Sharp ess ☐ Steep o	Working on contaminat luding use of cranes/ho edges/ shears   Pulle	ted equipment  Servi pists, powered lift)  Meys, belts, gears, pinch	on Asbestos removal Sce, maintenance, or modificati achine tools/powder-actuated points Walking/working on ng, grading, and disposal	on of de-energized tools  Welding, soldering, irregular surfaces
		e materials us	sed) 🗌 Solve	nts, adhesives, coatings		ource regulated by Air District  Dotential to emit other air	
		retention tank	k, percolation	oits Categorical prod		c system	
		cal) 🥯 🔲 Wo	ork in area des	ignated as having cultu		plain, natural habitats, wetland ources ☐ Work in area desig	
		urces of elect	rical power) 🗀	Energized electrical e	quipment (work on expo	ectrical power source (>140 V osed, energized electrical equi V)	
	Emergencies/Earthquak ☐ Spill/Release of hazard					afety issues	fety issues
	Explosives/Firearms   Other explosives/firear		nigh explosives	s, propellants, pyrotechi	nic or similar energetic r	material  Mock explosive	Firearms
	Pressure/Noise/Hazardo	ous Atmosphosig liquid ≥10 onfined space	00 kJ stored er s/ oxygen defi	ergy 🔲 Pressure system	ems containing hazardo	quid, <100 kJ stored energy [ ous fluids □ Vacuum systems s	
* F	or optional Team Indus	strial Hygien	ist use only.	Not integrated into e	-IWS system at this	time	

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# Integration Work Sheet (IWS)

	PART III HAZARDS/ENVIRONMENTAL ASPECTS & CONTR	ROLS (continued)
	Radiation- Ionizing/Non-Ionizing ☐ Radioactive material (encapsulated, non-encapsulated) ☐ ☐ Manual Doc 20.6 ☐ Radiation-generating devices (RGD) (accelerator, x-ray machine, e-beam, hig ☐ Non-ionizing radiation- class 3a — unattended or invisible, 3b, or 4 lasers, or intense UV, visible, or ☐ Radio frequency/microwaves sources > 3 kHz ☐ Emission to atmosphere ☐ Other radiation-ioni	gh voltage in a vacuum) infrared illumination☐ Electric/ magnetic fields < 3 kHz
	Remediation and Monitoring ☐ Grading or excavating in contaminated areas ☐ Movement/dispos ☐ Other remediation and monitoring	sal of soil Disturbing contaminated groundwater
	Storage Tanks	tanks
	temperature extremes)    Exposure to intense sunlight    Other temperature/weather	
	☐ Use of vehicles (aircraft, ATV, boat) ☐ Off-road driving ☐ Other transportation	
	Waste ☐ Hazardous waste ☐ Radioactive waste (TRU, LLW) ☐ Mixed waste or other waste wi Waste ☐ Non-Regulated Biological (NRB) ☐ Municipal wastes ☐ Industrial waste ☐ Material for	th no disposal option 🔍 🗌 Medical or Biohazardous or recycling 🔲 Other waste
	☐ Work involving individuals <18 years of age ☐ Work requiring specific unusual physical capabilitie	es Other work capability/motion
	Natural Resources ☐ Water Use (in industrial, experimental, process activities) ☐ Electrical Energ paper, plastic, glass, etc.)  ☐ Land Use/Land Management ☐ Fossil Fuel consumption  ☐ Oth	y Use 🌑 🗌 Nonhazardous Material use (metal stock, ner
	Other Hazards and Environmental Aspects   Other Hazards and Environmental Aspects	
Haza	azard Description and Controls: Describe each hazard listed above and the specific controls: (engineers	ed controls, personal protective equipment, etc. State if
Haz	Chemical Hygiene, etc.) azard Description Control	
	raining: List the required training and the individual requiring the training by name ame Employee # Course#	
	PART IV SITE LOCATION/DIRECTORATE ADD	TIONS
Cita	ite Location/Directorate-Specific Additions: Site location (e.g., S-300, NTS, off-site) or Dir	
Site	tte Location/Directorate-Specific Additions. She location (e.g., 3-300, NTS, oil-she) of Dir	ectorate-specific additions can be added fiere.
	PART V ES&H DOCUMENTS/PERMITS/APPROVALS MEDIC	CAL SURVEILLANCE
ES8	S&H Documents / Permits / Approvals / Medical Surveillance: The following controls are	required:
	] ES&H Documents needed: ☐ IWS only-(WAL B) ☐ IWS & Safety Plan- (IWS/SP-WAL	C) Other ES&H Documents:
<u> </u>	LLNL Work Permits/Approvals:	
	Agency Work Permits/Approvals:	
	Medical Surveillance/Certification:	
	PART VI SIGNATURES	
As t	s the RI, I have reviewed the hazards and agree to implement the controls identified in this IV	WS:
Res	esponsible Individual (RI):	Date:
The	he proposed work falls within the safety envelope of the facility/area and may commence onc	ee authorized:
FPC	POC Concurrence	Date:
FPC	POC Concurrence (if required)	Date:
I ha	have reviewed the hazards and controls for this work and concur that the work may commend	ce once authorized:
Site	ite Location/Directorate Specific Concurrence (if required)	Date:
	he hazards and controls have been properly identified and the work may commence once au oncurrence is required for WAL B; ES&H Team concurrence is required for WAL C.)	thorized (Note: ES&H Team or designee
ES	S&H Concurrence: Title:	Date:
App	pproval: The controls have been confirmed and this proposed activity is authorized to proceed	ed.
Aut	uthorizing Individual (AI)	Date:

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11/23/05

# Integration Work Sheet (IWS)

To be completed by the ES&H Team or their Designee or the RI (Transfer information on the checked items to Part V of the IWS form)

WS only needed (WAL B. ES&H Team or designee concurrence required)   WS & Safety Plan (IWS/SP) needed (WAL C - ES&H Team concurrence required)   Other ES&H Documents needed:   Safety Basis document update needed (e.g., USO or other)   Engineering safety note needed   Job Hazard Analysis needed (JRA)   Other
IWS & Safety Plan (IWS/SP) needed (WAL C - ES&H Team concurrence required)   Other ES&H Documents needed:   Safety Basis document update needed (e.g., USQ or other)   Engineering safety note needed   NEPA document needed   IMA   Other   Albach required documentation or list where the documents can be found.
Other ES&H Documents needed:   Safety Basis document needed (e.g., USQ or other)     Engineering safety note needed (e.g., USQ or other)     Engineering safety note needed (UHA)     Other     Attach required documentation or list where the documents can be found:     Attach required documentation or list where the documents can be found:     Building and/or equipment drain     Interior concrete floor, wall, and ceiling penetration     Asbestos permit     Confined space permit     Hot work     Hazardous work permit (ES&H Manual Doc. 17.1 Sec. 3.18)     Lead work     Radation work permit (ES&H Manual Doc. 17.1 Sec. 3.18)     Lead work     Radation work permit (BS&H Manual Doc. 17.1 Sec. 3.18)     Combined space lead to the standard of the
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Job Hazard Analysis needed (JHA)     Other     Attach required documentation or list where the documents can be found.
Other
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Building and/or equipment drain   Interior concrete floor, wall, and celling penetration   Asbestsos permit   Confined space permit   Hot work   Hazardous work permit (ES&H Manual Doc. 17.1 Sec. 3.18)   Lead work   Radiation work permit   Roof access   Soil excavation, grading (dig permit), and/or drilling permit   CMID tag needed   Soil movement/disposal   Preconstruction, site evaluation request form   Radioactive waste (Lifecycle planning)   Pollution Prevention evaluation needed   Significant environmental aspect(s) identified ● Optional text:   LLNL Committee approval (committee name)   Other:     Agency Work Permits/Approvals:   Alr district notification for asbestos and/or demolítion   Water discharge permit/exemption   Water discharge permit/exemption   Gish and Wildlife consultation   Other:     Medical Surveillance/Certification:   Asbestos worker
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Soil excavation, grading (dig permit), and/or drilling permit  CMID tag needed  Soil movement/disposal  Preconstruction, site evaluation request form  Radioactive waste (Lifecycle planning)  Pollution Prevention evaluation needed  Energy efficiency or water conservation analysis needed  Significant environmental aspect(s) identified Optional text:  LLNL Committee approval (committee name)  Other:  Agency Work Permits/Approvals:  Air district notification for asbestos and/or demolition  Air permit/exemption  NESHAP  Waste permit/exemption  Water discharge permit/exemption  Fish and Wildlife consultation  Other:  Medical Surveillance/Certification:
CMID tag needed   Soil movement/disposal   Preconstruction, site evaluation request form   Radioactive waste (Lifecycle planning)   Pollution Prevention evaluation needed   Energy efficiency or water conservation analysis needed   Significant environmental aspect(s) identified
Preconstruction, site evaluation request form   Radioactive waste (Lifecycle planning)   Pollution Prevention evaluation needed   Energy efficiency or water conservation analysis needed   Significant environmental aspect(s) identified
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Pollution Prevention evaluation needed   Energy efficiency or water conservation analysis needed   Significant environmental aspect(s) identified
Energy efficiency or water conservation analysis needed   Significant environmental aspect(s) identified  Optional text:   LLNL Committee approval (committee name)  Other:   Other:
Significant environmental aspect(s) identified ● Optional text:   LLNL Committee approval (committee name)
LLNL Committee approval (committee name)   Other:     Other:     Agency Work Permits/Approvals:     Air district notification for asbestos and/or demolition     Air permit/exemption     NESHAP   Waste permit/exemption     Water discharge permit/exemption     Fish and Wildlife consultation     Other:     Medical Surveillance/Certification:     Asbestos worker
Other:     Agency Work Permits/Approvals:   Air district notification for asbestos and/or demolition   Air permit/exemption   NESHAP   Waste permit/exemption   Water discharge permit/exemption   Fish and Wildlife consultation   Other:     Medical Surveillance/Certification:   Asbestos worker
Agency Work Permits/Approvals:    Air district notification for asbestos and/or demolition   Air permit/exemption   NESHAP   Waste permit/exemption   Water discharge permit/exemption   Fish and Wildlife consultation   Other:
Air district notification for asbestos and/or demolition   Air permit/exemption   NESHAP   Waste permit/exemption   Water discharge permit/exemption   Fish and Wildlife consultation   Other:     Medical Surveillance/Certification:   Asbestos worker
Air district notification for asbestos and/or demolition   Air permit/exemption   NESHAP   Waste permit/exemption   Water discharge permit/exemption   Fish and Wildlife consultation   Other:     Medical Surveillance/Certification:   Asbestos worker
Air permit/exemption   NESHAP   Waste permit/exemption   Water discharge permit/exemption   Fish and Wildlife consultation   Other:   Medical Surveillance/Certification:   Asbestos worker
□ NESHAP □ Waste permit/exemption □ Water discharge permit/exemption □ Fish and Wildlife consultation □ Other: □ Medical Surveillance/Certification: □ Asbestos worker
□ Waste permit/exemption □ Water discharge permit/exemption □ Fish and Wildlife consultation □ Other: □ Medical Surveillance/Certification: □ Asbestos worker
□ Water discharge permit/exemption □ Fish and Wildlife consultation □ Other: □ Medical Surveillance/Certification: □ Asbestos worker
☐ Other:
Medical Surveillance/Certification:
☐ Asbestos worker
☐ Asbestos worker
☐ Asbestos worker
☐ Beryllium associated worker-1 (potential exposure 10 days or more/year)
☐ Beryllium associated worker-2 (potential exposure less than 10 days/year)
☐ Future Beryllium associated worker (no current exposure, but potential future exposure)
☐ Works with Biohazards
☐ Works with Carcinogens
☐ Hazardous Waste worker ☐ Hearing Conservation required
☐ Lead handler
☐ Commercial Drivers License required
☐ Crane Operator
☐ Explosives worker
☐ Firefighter
Laser Eye exposure potential
☐ Respirator required
□ PAP □ PSAP □ PSO
☐ Other:

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